SIEMENS

DICOM Conformance Statement

MAMMOMAT Inspiration
Annex DicomProxy

siemens.com/dicom

Annex DicomProxy

The Mammomat Inspiration DicomProxy is a converter box designed for Mammomat Inspiration to create Breast Tomosynthesis objects. The Mammomat Inspiration DicomProxy forwards DICOM messages. Therefor the DICOM Conformance Statement of Mammomat Inspiration VB30 or higher (www.siemens.com/dicom) is valid and extended by this document. During the Transfer of images utilizing the DICOM CT SOP Class issued by Mammomat Inspiration this data is converted into images utilizing the Breast Tomosynthesis SOP class.

SOP Specific Conformance Breast Tomosynthesis

The Overlay plane module (groups 60xx) is not transferred to the Breast Tomosynthesis object.

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Breast Tomosynthesis IOD Content

Please see the following tables for a complete overview of supplied type 1/2/3 standard and additional extended attributes:

The following tables use a number of abbreviations. The abbreviations used in the “PRESENCE OF VALUE” column are:

VNAP	Value Not Always Present (attribute sent zero length if no value is present)
ANAP	Attribute Not Always Present
ALWAYS	Always Present
EMPTY	Attribute is sent without a value

The abbreviations used in the “SOURCE” column:

MWL	the attribute value source Modality Worklist
USER	the attribute value source is from User input
AUTO	the attribute value is generated automatically
MPPS	the attribute value is the same as that use for Modality Performed Procedure Step
CONFIG	the attribute value source is a configurable parameter

For some values only a dummy can be provided, since the information is not available in the CT images provided by Mammomat Inspiration.

Breast Tomosynthesis Extended SOP Class

NAME	TAG	VR	PRESENCE OF VALUE	SOURCE	VALUE
Specific Character Set	(0008,0005)	CS	ALWAYS	MWL / CONFIG	From Configuration / RIS
Image Type	(0008,0008)	CS	ALWAYS	AUTO	ORIGNAL\PRIMARY\ TOMOSYNTHESIS\NONE or ORIGINAL\PRIMARY\ TOMOSYNTHEIS\INSIGHT_3D
SOP Class UID	(0008,0016)	UI	ALWAYS	AUTO	1.2.840.10008.5.1.4.1.1.13.1.3
SOP Instance UID	(0008,0018)	UI	ALWAYS	AUTO	Created
Study Date	(0008,0020)	DA	ALWAYS	AUTO	<yyyymmdd>
Series Date	(0008,0021)	DA	ALWAYS	AUTO	<yyyymmdd>
Acquisition Date	(0008,0022)	DA	ALWAYS	AUTO	Date of Original Acquisition (X-Ray event)
Content Date	(0008,0023)	DA	ALWAYS	AUTO	Date of Creation
Study Time	(0008,0030)	TM	ALWAYS	AUTO	<hhmmss>
Series Time	(0008,0031)	TM	ALWAYS	AUTO	<hhmmss>
Acquisition Time	(0008,0032)	TM	ALWAYS	AUTO	Time of Original Acquisition (X-Ray event)
Content Time	(0008,0033)	TM	ALWAYS	AUTO	Time of Creation
Accession Number	(0008,0050)	SH	VNAP	MWL / USER	RIS or “Accession No.” input

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NAME	TAG	VR	PRESENCE OF VALUE	SOURCE	VALUE
Modality	(0008,0060)	CS	ALWAYS	AUTO / MPPS	MG
Manufacturer	(0008,0070)	LO	ALWAYS	AUTO	SIEMENS
Institution Name	(0008,0080)	LO	ALWAYS	MWL / USER / CONFIG	RIS or “Institution Name” input
Institution address	(0008,0081)	ST	ALWAYS	CONGIG	From configuration
Referring Physician's Name	(0008,0090)	PN	VNAP	MWL / USER	RIS or input
Station Name	(0008,1010)	SH	ALWAYS	CONFIG	from Configuration hostname
Study Description	(0008,1030)	LO	ALWAYS	MWL / AUTO	RIS Requested Procedure Description or mapped procedure
Procedure Code Sequence	(0008,1032)	SQ	ANAP	MWL / AUTO / MPPS	Requested Procedure Code Sequence (0032,1062) from Modality Worklist or configured Code
Series Description	(0008,103E)	LO	ALWAYS	USER / AUTO	BTO_TOMO….. or BTO_Insight 3D
Institutional Department Name	(0008,1040)	LO	ALWAYS	AUTO	From configuration
Physician’s of Record	(0008,1048)	PN	ANAP	AUTO	From RIS
Performing Physician's Name	(0008,1050)	PN	ANAP	MWL / USER	Performing Physician
Operator's Name	(0008,1070)	PN	ANAP	USER	“Operator 1”\”Operator 2” input
Admitting Diagnosis Description	(0008,1080)	LO	ANAP	MWL	“Admitting Diagnosis”
Manufacturer's Model Name	(0008,1090)	LO	ALWAYS	AUTO	Inspiration
Referenced Study Sequence	(0008,1110)	SQ	ANAP	MWL	From RIS
Referenced Performed Procedure Step Sequence	(0008,1111)	SQ	ALWAYS	MPPS	Set even if MPPS is not configured
Referenced Patient Sequence	(0008,1120)	SQ	ANAP	MWL / MPPS	From RIS
Derivation Description	(0008,2111)	ST	ALWAYS	AUTO	Image Processing Parameters + BTO DicomProxy <version>
Pixel Presentation	(0008,9205)	CS	ALWAYS	AUTO	MONOCHROME
Volumetric Properties	(0008,9206)	CS	ALWAYS	AUTO	VOLUME

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NAME	TAG	VR	PRESENCE OF VALUE	SOURCE	VALUE
Volumetric Based Calculation Technique	(0008,9207)	CS	ALWAYS	AUTO	TOMOSYNTHESIS
Patient's Name	(0010,0010)	PN	ALWAYS	MWL / USER / MPPS	RIS or "Patient Name" input
Patient ID	(0010,0020)	LO	ALWAYS	MWL / USER / MPPS	RIS or "Patient ID" input
Patient's Birth Date	(0010,0030)	DA	ALWAYS	MWL / USER/ MPPS	RIS or checked "Date of Birth" input
Patient's Birth Time	(0010,0032)	TM	ANAP	MWL / USER/ MPPS	RIS or checked "Date of Birth" input
Patient's Sex	(0010,0040)	CS	ALWAYS	MWL / USER/ MPPS	RIS or input (M or F or O/unknown)
Other Patient IDs	(0010,1000)	LO	ANAP	MWL / USER	From RIS / Social Security Number
Other Patient Names	(0010,1001)	PN	ANAP	MWL	From RIS
Other Patient Ids Sequence	(0010,1002)	SQ	ANAP	MWL / USER	RIS or Input
Patient ID	(0010,0020)	LO	ANAP	MWL / USER	RIS or Input
Issuer of Patient ID	(0010,0021)	LO	ANAP	MWL / USER	RIS or Input
Patient's Age	(0010,1010)	AS	ALWAYS	AUTO	Calculated from “Date of Birth” input
Patient's Size	(0010,1020)	DS	ANAP	MWL / USER	Patient’s height in meters
Patient‘s Weight	(0010,1030)	DS	ANAP	MWL / USER	(in kilograms)
Military Rank	(0010,1080)	LO	ANAP	MWL	From RIS
Ethnic Group	(0010,2160)	SH	ANAP	MWL	From RIS
Additional Patient History	(0010,21B0)	LT	ANAP	MWL	From RIS
Pregnancy Status	(0010,21C0)	US	ANAP	MWL	From RIS
Patient Comments	(0010,4000)	LT	ANAP	MWL/USER	“Additional Info”
Body Part examined	(0018,0015)	IS	ALWAYS	AUTO	BREAST
Device Serial Number	(0018,1000)	LO	ALWAYS	AUTO	<modality serial number>
Software Versions	(0018,1020)	LO	ALWAYS	AUTO	<version>
Protocol Name	(0018,1030)	LO	ALWAYS	AUTO	TOMO or INSIGHT_3D
Content Qualification	(0018,9004)	CS	ALWAYS	AUTO	PRODUCT
Contributing Sources Sequence	(0018,9506)	SQ	ALWAYS	AUTO	See *X-Ray 3D Acquisition Sequence**Contributing Sources Sequence*
X-Ray 3D Acqui-	(0018,9507)	SQ	ALWAYS	AUTO	See *X-Ray 3D Acquisition Sequence*

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NAME	TAG	VR	PRESENCE OF VALUE	SOURCE	VALUE
sition Sequence					
Study Instance UID	(0020,000D)	UI	ALWAYS	MWL / AUTO	From RIS or system generated
Series Instance UID	(0020,000E)	UI	ALWAYS	AUTO	generated
Study ID	(0020,0010)	SH	ALWAYS	MWL / USER / AUTO / MPPS	From RIS Requested Procedure ID or system created
Series Number	(0020,0011)	IS	ALWAYS	AUTO	generated
Instance Number	(0020,0013)	IS	ALWAYS	AUTO	generated
Frame of Reference UID	(0020,0052)		ALWAYS	AUTO	generated
Position Reference Indicator	(0020,1040)	LO	ALWAYS	AUTO	Empty
Image Comments	(0020,4000)	LT	VNAP	USER/AUTO	If entered in UI
Samples per Pixel	(0028,0002)	US	ALWAYS	AUTO	1
Photometric Interpretation	(0028,0004)	CS	ALWAYS	AUTO	MONOCHROME2
Number of Frames	(0028,0008)	*IS*	ALWAYS	*AUTO*	Number of frames
Rows	(0028,0010)	US	ALWAYS	AUTO	rows
Columns	(0028,0011)	US	ALWAYS	AUTO	columns
Bits Allocated	(0028,0100)	US	ALWAYS	AUTO	16
Bits Stored	(0028,0101)	US	ALWAYS	AUTO	12
High Bit	(0028,0102)	US	ALWAYS	AUTO	11
Pixel Representation	(0028,0103)	US	ALWAYS	AUTO	0
Pixel Padding Value	(0028,0120)	US	ALWAYS	AUTO	0
Quality Control Image	(0028,0300)	CS	ALWAYS	USER / AUTO	YES or NO
Burned In Annotation	(0028,0301)	CS	ALWAYS	AUTO	“NO”
Breast Implant Present	(0028,1300)	CS	ALWAYS	AUTO	YES or NO
Partial View	(0028,1350)	CS	ALWAYS	AUTO	NO
Spatial Locations Preserved	(0028,135A)	CS	ALWAYS	AUTO	YES or NO
Lossy Image Compression	(0028,2110)	CS	ALWAYS	AUTO	“00”, “01” if image was sent lossy compressed by the USER
Requesting Physician	(0032,1032)	PN	ANAP	MWL	From RIS
Requesting Service	(0032,1033)	LO	ANAP	MWL	From RIS

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NAME	TAG	VR	PRESENCE OF VALUE	SOURCE	VALUE
Requested Procedure Description	(0032,1060)	LO	ANAP	MWL	From RIS
Requested Procedure Code Sequence	(0032,1064)	SQ	ANAP	MWL	From RIS
>Code Value	(0008,0100)	SH	ANAP	MWL	From RIS
>Coding Scheme Designator	(0008,0102)	SH	ANAP	MWL	From RIS
>Coding Scheme Version	(0008,0103)	SH	ANAP	MWL	From RIS
>Code Meaning	(0008,0104)	LO	ANAP	MWL	From RIS
Study Comments	(0032,4000)	LT	ANAP	USER	Patient Registration input
Special Needs	(0038,0050)		ANAP	MWL	From RIS
Patient State	(0038,0500)		ANAP	MWL	From RIS
Performed Procedure Step Start Date	(0040,0244)	DA	ALWAYS	AUTO/ MPPS	supplied, even if MPPS SOP Class is not supported
Performed Procedure Step Start Time	(0040,0245)	TM	ALWAYS	AUTO/ MPPS	supplied, even if MPPS SOP Class is not supported
Performed Procedure Step ID	(0040,0253)	SH	ALWAYS	AUTO/ MPPS	supplied, even if MPPS SOP Class is not supported, "MGyyyymmddhhmmss" is set with 1st Image acquired
Performed Procedure Step Description	(0040,0254)	LO	ALWAYS	AUTO/ MPPS	Value of Study Description
Performed Protocol Code Sequence	(0040,0260)	SQ	ANAP	MWL/ MPPS	Same as 0040,0275>0040,0008
Request Attrib-utes Sequence	(0040,0275)	SQ	ANAP	MWL	From RIS
>Scheduled Procedure Step Description	(0040,0007)	LO	ANAP	MWL	From RIS
>Scheduled Protocol Code Sequence	(0040,0008)	SQ	ANAP	MWL	From RIS
>Scheduled Pro-cedure Step ID	(0040,0009)	SH	ANAP	MWL	From RIS
>Requested Procedure ID	(0040,1001)	SH	ANAP	MWL / USER	From RIS or “Request ID” input
Acquisition Con-text Sequence	(0040,0555)	*SQ*	ALWAYS	AUTO	<null>
Reason For Performed Procedure Step	(0040,1012)	SQ	ALWAYS	MWL / USER	RIS or Input

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NAME	TAG	VR	PRESENCE OF VALUE	SOURCE	VALUE
Sequence					
Confidentiality Constraint on Patient Data Description	(0040,3001)	LO	ANAP	MWL	From RIS
View Code Sequence	(0054,0220)	SQ	ALWAYS	AUTO / USER	CID 4014
Presentation LUT Shape	(2050,0020)	CS	ALWAYS	AUTO	IDENTITY
Shared Functional Groups Sqeuence	(5200,9229)	SQ	ALWAYS	AUTO	Shared attributes see *Shared Functional Groups Sequence*
Per Frame Functional Groups Sqeuence	(5200,9230)	SQ	ALWAYS	AUTO	Per Frame attributes see *Per Frame Functional Groups Sequence*
Pixel Data	(7FE0,0010)	OB-OW	ALWAYS	AUTO	Pixel frames

1.1.1.1 Shared Functional Groups Sequence

ATTRIBUTE NAME	TAG	VR	PRESENCE OF VALUE	VALUE
Frame Anatomy Sequence	(0020,9071)	SQ	ALWAYS	-
>Anatomic Region Sequence	(0008,2218)	SQ	ALWAYS	-
>> Code Value	(0008,9205)	SH	ALWAYS	T-0400
>> Coding Scheme Designator	(0008,9206)	SH	ALWAYS	SRT
>> Code Meaning	(0008,9207)	LO	ALWAYS	Breast
Frame Laterality	(0020,9072)	CS	ALWAYS	<laterality>
Plane Orientation Sequence	(0020,9116)	SQ	ALWAYS	-
>Image Orientation (Patient)	(0020,0037)	DS	ALWAYS	Calculated
Pixel Measures Sequence	(0028,9110)	SQ	ALWAYS	-
>Slice Thickness	(0018,0050)	DS	ALWAYS	calculated
>Pixel Spacing	(0028,0030)	DS	ALWAYS	calculated

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ATTRIBUTE NAME	TAG	VR	PRESENCE OF VALUE	VALUE
Frame VOI LUT sequence	(0028,9132)	SQ	ALWAYS	-
>Window Center	(0028,1050)	DS	ALWAYS	calculated
>Window Width	(0028,1051)	DS	ALWAYS	calculated
>Window Center and Width Explanation	(0028,1055)	LO	ALWAYS	linear LUT
Pixel Value Transformation Sequence	(0028,9145)	SQ	ALWAYS	-
>Rescale Intercept	(0028,1052)	DS	ALWAYS	0
>Rescale Slope	(0028,1053)	DS	ALWAYS	1
>Rescale Type	(0028,1054)	LO	ALWAYS	US

1.1.1.2 Per Frame Functional Groups Sequence

ATTRIBUTE NAME	TAG	VR	PRESENCE OF VALUE	VALUE
X-Ray 3D Frame Type Sequence	(0018,9504)	SQ	ALWAYS	-
> Frame Type	(0008,9007)	CS	ALWAYS	DERIVED\PRIMARY\TOMOSYNTHESIS\NONE
> Pixel Presentation	(0008,9205)	CS	ALWAYS	MONOCHROME
>Volumetric Properties	(0008,9206)	CS	ALWAYS	VOLUME
>Volumetric Based Calculation Technique	(0008,9207)	CS	ALWAYS	TOMOSYNTHESIS
Frame Content Sequence Sequence	(0020,9111)	SQ	ALWAYS	-
>Frame Acquisition Date and Time	(0018,9074)	DT	ALWAYS	Date and Time
>Frame Acquisition Number	(0020,9156)	UL	ALWAYS	Acquisition Number

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ATTRIBUTE NAME	TAG	VR	PRESENCE OF VALUE	VALUE
Plane Position Sequence	(0020,9113)	SQ	ALWAYS	-
> Image Posi-tion (Patient)	(0020,0032)	DS	ALWAYS	calculated

1.1.1.3 X-Ray 3D Acquisition Sequence

ATTRIBUTE NAME	TAG	VR	PRESENCE OF VALUE	VALUE
KVP	(0018,0060)	DS	ALWAYS	value
Distance Source to Detector	(0018,1110)	DS	ALWAYS	(mm) SID
Distance Source to Patient	(0018,1111)	DS	ALWAYS	(mm) SOD
Estimated Radiographic Factor	(0018,1114)	DS	ALWAYS	(mm) SID/SOD
Field of View Shape	(0018,1147)	CS	ALWAYS	RECTANGLE
Filter Type	(0018,1160)		ALWAYS	STRIP
Exposure	(0018,1152)	IS	ALWAYS	(mAs)
Grid	(0018,1166)	DS	ALWAYS	NONE
Focal Spot	(0018,1190)	DS	ALWAYS	0.1 | 0.3
Anode Target Material	(0018,1191)	CS	ALWAYS	TUNGSTEN
Body Part Thickness	(0018,11A0)	DS	ALWAYS	(mm)
Compression Force	(0018,11A2)	DS	ALWAYS	(Newton)
Paddel Description	(0018,11A4)	LO	ALWAYS	TOMO

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ATTRIBUTE NAME	TAG	VR	PRESENCE OF VALUE	VALUE
Detector Temperature	(0018,7001)	DS	ALWAYS	Dummy
Field of View Origin	(0018,7030)	DS	ALWAYS	0\0
Filter Material	(0018,7050)	CS	ALWAYS	RHODIUM
Filter Thickness Minimum	(0018,7052)	DS	ALWAYS	0.05
Filter Thickness Maximum	(0018,7054)	DS	ALWAYS	0.05
Exposure Control Mode	(0018,7060)	CS	ALWAYS	AUTOMATIC
Exposure Control Mode Description	(0018,7062)	LT	ALWAYS	“unkown”
Exposure Time	(0018,9328)	FD	ALWAYS	<duration of x-Ray exposure>(msec)
X-Ray Tube Current	(0018,9330)	FD	ALWAYS	(mA)
Exposure in mAs	(0018,9332)	FD	ALWAYS	(mAs)
Source Isocenter Distance	(0018,9402)	FL	ALWAYS	value
X-Ray Receptor Type	(0018,9420)	CS	ALWAYS	DIGITAL_DETECTOR
Primary Position-er Scan Arc	(0018,9508)	FL	ALWAYS	Sign of value: from vertical to patient’s right is positive
Primary Position-er Scan Start Arc	(0018,9510)	FL	ALWAYS	Current value
Primary Position-er Increment	(0018,9514)	FL	ALWAYS	Current value
Start Acquisition Date Time	(0018,9516)	DT	ALWAYS	Current value
Per Projection Acquisiion Sequence	(0018,9538)	SQ	ALWAYS	one representative item containing accumulated values

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ATTRIBUTE NAME	TAG	VR	PRESENCE OF VALUE	VALUE
Half Value Layer	(0040,0314)	DS	ALWAYS	0.533 Comment:The thickness of Aluminum in mm required to reduce the X-RayOutput
Organ dose	(0040,0316)	DS	ALWAYS	For all projections
Entrance Dose in mGy	(0040,8302)	DS	ALWAYS	Current value

1.1.1.4 Contributing Sources Sequence

ATTRIBUTE NAME	TAG	VR	PRESENCE OF VALUE	VALUE
Acquisition Date Time	(0008,002A)	DT	ALWAYS	value
Manufacturer	(0008,0070)	LO	ALWAYS	SIEMENS
Manufacturer's Model Name	(0008,1090)	LO	ALWAYS	Mammomat Inspiration
Detector Type	(0018,7004)	CS	ALWAYS	DIRECT
Detector ID	(0018,700A)	SH	ALWAYS	Serial number
Date of Last Detector Calibration	(0018,700C)	DA	ALWAYS	Dummy
Time of Last Detector Calibration	(0018,700E)	TM	ALWAYS	Dummy
Detector Element Spacing	(0018,7022)	DS	ALWAYS	Current values
Contributing SOP Instances Reference Sequence	(0020,9529)	SQ	ALWAYS	References to projection images
Manufacturer	(0008,0070)	LO	ALWAYS	SIEMENS
Manufacturer's Model Name	(0008,1090)	LO	ALWAYS	Mammomat Inspiration
Rows	(0028,0010)	US	ALWAYS	rows
Columns	(0028,0011)	US	ALWAYS	columns
Bits Stored	(0028,0101)	US	ALWAYS	16
Lossy Image Compression	(0028,2110)	CS	ALWAYS	00

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